IN THE CLAIMS:

1. (Currently amended) A mixed conductor in the form of a single material comprising ~~characterized by being a compound of an~~ inorganic electron conductor portions ~~made of an inorganic material~~ and inorganic ~~a~~ proton conductor portions ~~made of an inorganic material~~ , said inorganic electron conductor and inorganic proton conductor portions being fixed together by at least one of covalent bonding, intercalation and inclusion, said mixed conductor exhibiting both electron and proton conduction at a temperature below 200° C.

2. (Currently amended) The mixed conductor according to claim 1, wherein said electron conductors are ~~is~~ obtained by carbonizing at least one member selected from the group consisting of aliphatic hydrocarbons , aromatic hydrocarbons and derivatives thereof ~~of the aliphatic hydrocarbon and the aromatic~~.

3. (Currently amended) The mixed conductor according to claim 2, wherein ~~each of~~ said ~~aliphatic hydrocarbon, aromatic hydorcarbon and derivatives of the aliphatic hydrocarbon and the aromatic hydrocarbon contains~~ at least one member is selected from the ~~a~~ group consisting of polyacetylene, resorcinol, phenol, phenylphenol, polyaniline, polypyrrole, polythiophene, phenylphosphoric acid, phenylsilane alkoxide, pyrogallol, and dihydroxybiphenyl.

4. (Currently amended) The mixed conductor according to claim 1, wherein said electron conductor ~~is~~ portions are made of a carbonaceous material.

5. (Currently amended) The mixed conductor according to claim 1, wherein said proton conductor portions contain ~~contains~~ at least one member selected from the ~~a~~ phosphorus-containing compounds, ~~a~~ sulfur-containing compounds, carboxylic acids, boric acid and inorganic solid-state acids.

6. (Currently amended) The mixed conductor according to claim 1, wherein said electron conductor portions have ~~conductor has~~ consecutive carbon-carbon bonds including a carbon-carbon double bond.

7. (Previously presented) The mixed conductor according to claim 1, wherein said mixed conductor supports a noble metal catalyst.

8. (Currently amended) A mixed conductor in the form of a single material comprising ~~wherein~~ an inorganic electron conductor portions ~~made of an inorganic material~~ obtained by carbonizing an organic material ~~is fixed~~ and inorganic ~~a~~ proton conductor portions ~~made of an inorganic material~~ , said inorganic electron conductor and inorganic proton conductor portions being fixed together by at least one of covalent bonding, intercalation and inclusion, said mixed conductor exhibiting both electron and proton conduction at a temperature below 200° C.

9. (Currently amended) The mixed conductor according to claim 8, wherein the electron conductors are ~~conductor is~~ fixed to the proton conductors by a covalent bond.

10. (Currently amended) The mixed conductor according to claim 8, wherein the electron conductors are ~~conductor is~~ fixed to the proton conductors by intercalation.

11. (Currently amended) The mixed conductor according to claim 8, wherein the electron conductors are ~~conductor is~~ fixed to the proton conductors by inclusion.

12. (Currently amended) A method of producing a mixed conductor comprising:

a first step of obtaining a high molecular weight precursor by mixing and polymerizing at least one member selected from the ~~a~~ group consisting of aliphatic hydrocarbon, aromatic hydrocarbon and derivatives thereof ~~of the aliphatic hydrocarbon and the aromatic hydrocarbon~~ with a proton conducting material; and

a second step of burning the high molecular weight precursor, obtained in the

first step, in ~~under~~ an inert atmosphere.

13. (Currently amended) A method of producing a mixed conductor comprising:

a first step of ~~obtaining a high molecular precursor by mixing and~~ polymerizing at least one member selected from the ~~a~~ group consisting of aliphatic hydrocarbons, aromatic hydrocarbons and derivatives thereof ~~of the aliphatic hydrocarbon and the aromatic hydrocarbon ; and~~

a second step of mixing a proton conducting material with the polymerized member to obtain a high molecular weight precursor ~~into said at least one upon polymerization thereof~~ ; and

a third ~~second~~ step of burning the high molecular weight precursor obtained in the first step in ~~under~~ an inert atmosphere to convert the polymerized member to electron conducting portions.

14. (Original) A mixed conductor producing method wherein an organic compound is bound or mixed with a compound having movable protons to obtain a high polymer precursor, and said high polymer precursor is carbonized to thereby impart electron conduction to the precursor.

15. (Currently amended) The mixed conductor producing method according to claim 12, wherein ~~each of~~ said at least one member is selected from the ~~a~~ group consisting ~~of aliphatic hydrocarbon, aromatic hydrocarbon and derivatives of the aliphatic hydrocarbon and the aromatic hydrocarbon is at least one selected from a group consisting of~~ polyacetylene, resorcinol, phenol, phenylphenol, polyaniline, polypyrrole, polythiophene, phenylphosphoric acid, phenylsilane alkoxide, pyrogallol, and dihydroxybiphenyl.

16. (Currently amended) The mixed conductor producing method according to claim 12, wherein said proton conducting material is ~~conductor contains~~ at least one member selected from the ~~a~~ group consisting of ~~a~~ phosphorus-containing compounds,

~~a~~ sulfur-containing compounds, carboxylic acids, boric acid, and inorganic solid-state acids.

17. (Currently amended) The mixed conductor producing method according to claim 12, comprising a third step of supporting a noble metal catalyst on ~~causing~~ the product burned in said second step ~~to support a noble metal catalyst~~.

18. (Previously presented) The mixed conductor producing method according to claim 12, wherein the first step comprises heating the high molecular precursor or heating the high molecular precursor under a pressurized condition.

19. (New) The mixed conductor according to claim 1 exhibiting both electron and proton conduction at temperatures within a range of from room temperature to 60° C.

20. (New) The mixed conductor according to claim 1 wherein said electron and proton conductor portions are covalently bound in a single polymeric molecular structure.

21. (New) The mixed conductor according to claim 8 exhibiting both electron and proton conduction at temperatures within a range of from room temperature to 60° C.

22. (New) The mixed conductor according to claim 8 wherein said electron and proton conductor portions are covalently bound in a single polymeric molecule structure.

23. (New) The mixed conductor according to claim 1 wherein the electron conductor portions are carbon skeletons bridged by the proton conductor portions.

24. (New) The mixed conductor according to claim 8 wherein the electron conductor portions are carbon skeletons bridged by the proton conductor portions.

25. (New) The mixed conductor according to claim 1 wherein the electron conductor portions are carbon skeletons bridged by the proton conductor portions.